

What Is Claimed Is:

1 1. In a trailer having a front loading end, a trailer bed,
2 and a rear wheeled end, the trailer having a number of
3 longitudinally aligned trailer bed support rails, and a front end
4 assembly, the front end assembly having a pick up shaft
5 arrangement, a hitch contact area, and opposing ramp sections,
6 the improvement comprising a tapered box beam extending from the
7 pickup shaft arrangement, linking to a center end portion of the
8 trailer bed, the center portion spaced from sides of the trailer
9 bed, the tapered box beam including at least two tapered box beam
10 rails, an end of each tapered box beam rail aligned with a
11 respective trailer bed support rail, the box beam using the at
12 least two tapered box beam rails as walls thereof, the box beam
13 having top and bottom portions, the top portion including the
14 hitch contact area.

1 2. The trailer of claim 1, further comprising at least a
2 pair of tapered side rails, the at least two tapered box beam
3 rails disposed between the tapered side rails, and cross members
4 interconnecting the side rails, successive heights of the cross
5 members following the tapers of the side rails and the at least
6 two tapered box beam rails.

1 3. In a method of lifting a lowboy trailer having a
2 trailer bed and using a gooseneck hitch, wherein a hook of the
3 hitch couples to a pickup shaft, and a tow member of the hitch
4 applies a lifting force to the trailer front end assembly to
5 pivot the gooseneck and raise the trailer, the improvement
6 comprising:

7 providing a tapered box beam that extends from the
8 pickup shaft along a trailer length; and

9 lifting the trailer end using the gooseneck hitch
10 whereby the tapered box beam distributes the lifting load along
11 the box beam length and to a central end portion of the trailer
12 bed that is spaced from the sides of the trailer bed.

1 4. The method of claim 3, wherein the tapered box beam
2 includes tapered side rails connected together by cross members
3 tapered in height to match a taper of the box beam, and the
4 lifting step distributes load to at least a portion of the
5 tapered sides rails via the cross members.

6 5. In a trailer having a front loading end and a rear
7 wheeled end, the trailer having a number of longitudinally
8 aligned trailer load support rails, and a front end assembly, the
9 front end assembly having a pick up shaft arrangement, a hitch
10 contact area, and opposing ramp sections, the improvement
11 comprising means for distributing the lifting load along a center

12 portion of the front end assembly, and then distributing at least
13 a portion of the lifting load to a center portion of an end of a
14 trailer bed of the trailer, the center portion spaced from sides
15 of the trailer bed.

1 6. The trailer of claim 5, further comprising means to
2 distribute the lifting load laterally of the center portion and
3 then to outer portions of the end of the trailer bed.

1 7. In a trailer having a front loading end and a rear
2 wheeled end, the trailer having a number of longitudinally
3 aligned trailer load support rails, and a front end assembly, the
4 front end assembly having a pick up shaft arrangement, hitch
5 contact area, and opposing ramp sections, the improvement
6 comprising:

7 a central box beam including top and bottom portions,
8 and at least tapered box beam rails as walls of the box beam, the
9 central box beam extending from the pickup shaft arrangement to
10 at least a trailer bed front portion, the at least two support
11 rails aligned with two central support rails that further extend
12 a length of the trailer;

13 a trailer bed assembly comprising a pair of trailer bed
14 side sections and cross members, each trailer bed side section
15 linked to the central support rails via the cross members; and

16 a pair of ramp sections adapted to be removably
17 attachable to the trailer bed assembly at the trailer bed front

18 portion, the box beam longitudinally disposed between the ramp
19 sections.

1 8. The trailer of claim 7, wherein the cross members
2 extend through the center support rails or extend laterally and
3 outwardly from the center support rails.

1 9. The trailer of claim 7, further comprising at least one
2 axle assembly attached to the at least two trailer support rails
3 or a removable axle assembly attached to ends of the center
4 support rails.

5 10. A method of constructing a front end loading trailer
6 comprising:

7 providing a central box beam including top and bottom
8 portions, and at least two tapered support rails, the central box
9 beam extending from a pickup shaft arrangement to at least a
10 trailer bed front portion, the at least two tapered support rails
11 aligned with center support rails that extend a length of the
12 trailer;

13 providing trailer bed side sections, and attaching the
14 trailer bed side section to cross members linked to the center
15 support rails.

1 11. The method of claim 10, wherein the cross members
2 extend through the center support rails, or extend laterally and
3 outwardly from the center support rails.

1 12. The method of claim 10, further comprising attaching a
2 ramp section to either or both of the central box beam or the
3 trailer bed assembly, the box beam disposed longitudinally
4 between the ramp sections.

1 13. The trailer of claim 1, wherein the ramp sections can
2 be removed and reinstalled from the trailer.

1 14. The trailer or method of claims 1-12, wherein the
2 tapered rails have webs and opposing flanges, and the flanges
3 form part of the top and bottom portions of the box beam.

1 15. The trailer of claim 8 or method of claim 12, wherein
2 the side bed sections use link plates and pins or opening-
3 containing flanges and pins to connect to the cross members.

1 16. The trailer of claim 7 or method of claim 11, wherein
2 each side bed section includes a longitudinal rail between sides
3 thereof, the longitudinal rail positioned to absorb crash down
4 forces during trailer loading.

1 17. The trailer or method of claim 16, wherein the side bed
2 sections have outer side rails which are lighter in duty than the
3 longitudinal rail.

1 18. The trailer of claim 6, further comprising a removable
2 axle assembly attached to ends of the center support rails, and

3 wherein the removable axle assembly is a single assembly for off-
4 road use or a dual assembly for over-the-road use, one of the
5 dual assemblies attached to ends of the center support rails.

1 19. The method of claim 10, further comprising the step of
2 providing a removable axle assembly attached to ends of the
3 center support rails.

1 20. The method of claim 19, wherein the removable axle
2 assembly is a single off-road use axle assembly or a dual over-
3 the-road use axle assembly, one of the dual axle assemblies
4 attached to ends of the center support rails.

1 21. The method of claim 20, wherein, prior to attaching the
2 trailer bed side sections to the center rails, the method further
3 comprises the steps of:

4 a) configuring the trailer with the center box beam and
5 center rails with a width to allow over-the road travel and thus
6 forming an over-the road trailer;

7 b) attaching the dual over-the-road use axle assembly to the
8 over-the road trailer;

9 c) driving the over-the road trailer to a site so that the
10 trailer bed side sections and single off-road use assembly can be
11 attached to the over-the road trailer to make it an off-road
12 trailer.

1 22. The method of claim 21, wherein one or both of the
2 single off-road use axle assembly and trailer bed side sections
3 are loaded onto the over-the-road trailer prior to the driving
4 step.

1 23. The trailer of claim 1, further comprising one of a
2 multiple axle over-the road assembly or an off-road axle assembly
3 are removably attached to an end of the trailer.

1 24. The trailer or method of any one of claims 1-23,
2 further comprising at least one adapter block mounted to the
3 trailer for movement between a stored and an operating position,
4 the block resting on a top surface portion of the trailer in the
5 operating position, the block having a two receiving surface for
6 trailer lifting.

1 25. The trailer or method of claim 24, further comprising a
2 pair of adapter blocks, each adapter block separately pivotable
3 between the stored and operating positions.

1 26. The trailer of claims 1, 5, or 7 or the method of
2 claims 3 and 10, wherein the trailer support rails are straight
3 at an rear end portion thereof, and further comprising a pair of
4 rear axle mounting plates adapted to connect to respective rear
5 ends of the trailer support rails in a vertical orientation, the
6 rear axle mounting plates adapted to rigidly support a rear axle.

1 27. The trailer or method of claim 26, wherein the axle
2 mounting plate is welded to the rear ends or removably attached
3 thereto.

1 28. The trailer or method of claims 26 or 27, wherein the
2 plates include surfaces for resting of one of more components
3 being hauled on the trailer.

1 29. The trailer or method of claims 26-28, further
2 comprising fenders mounted to and extending laterally across the
3 rear axle mounting plates.

1 30. The trailer or method of claim 29, wherein portions of
2 the plates containing the resting surfaces extend through
3 openings in the fenders.